

**CLAIMS:**

1. A video image display system, comprising:
  - a motion estimation circuit (112) adapted to generate motion vectors as a function of an incoming video signal and stored video data (114);
    - a front-end motion compensation circuit (110) adapted to generate a processed video signal as a function of the incoming video signal, the motion vectors and stored video data; and
    - a video signal conversion circuit (134, 136) adapted to generate a display signal for a specific video display as a function of the processed video signal and the motion vectors.
2. The system of claim 1, wherein the front-end motion compensation circuit includes the motion estimation circuit.
3. The system of claim 1, wherein the front-end motion compensation circuit is an upconversion circuit.
4. The system of claim 3, wherein the upconversion circuit is adapted to convert the incoming video signal to a signal having a higher frequency and to use the motion vectors to recreate motion phases of the output video at each temporal instant.
5. The system of claim 1, wherein the front-end circuit includes a deinterlacing circuit.
6. The system of claim 1, wherein the video signal conversion circuit includes a motion vector refinement circuit adapted to process the motion vectors for use by the video signal conversion circuit.

7. The system of claim 6, wherein the motion vector refinement circuit is adapted to modify the motion vectors as a function of at least one of: the resolution and the temporal phase of a video display for which the video signal conversion circuit generates the display signal.
8. The system of claim 1, further comprising a memory adapted to store information for use by the motion front-end motion compensation circuit to store processing information for processing the incoming video signal.
9. The system of claim 1, further comprising a memory adapted to store information for use by the video signal conversion circuit to store processing information for generating the display signal.
10. The system of claim 1, wherein the video signal conversion circuit is adapted to receive a corresponding video signal from the front-end motion compensation circuit and to process the corresponding video signal by estimating spatio-temporal characteristics of components of the video signal relative to the specific video display.
11. The system of claim 10, further including means for reusing motion estimation data.
12. The system of claim 1, wherein the front-end motion compensation circuit includes computation means for implementing motion compensation functions.
13. The system of claim 12, wherein the video signal conversion circuit is adapted to receive a corresponding video signal from the front-end motion compensation circuit and to process the corresponding video signal by estimating spatio-temporal characteristics of components of the video signal relative to the specific video display.
14. The system of claim 1, wherein the front-end motion compensation circuit includes computation means for implementing high temporal refresh rate functions.

15. The system of claim 1, wherein the front-end motion compensation circuit includes computation means for implementing high resolution functions for color sequential displays.
16. The system of claim 1, wherein the front-end motion compensation circuit includes computation means for implementing high temporal refresh rate functions and for implementing the high resolution functions for color sequential displays.
17. The system of claim 16, wherein the video signal conversion circuit is adapted to receive a corresponding video signal from the front-end motion compensation circuit and to process the corresponding video signal by calculating spatio-temporal characteristics of components of the video signal relative to the specific video display.
18. For use with a video display, a method for generating video, the method comprising:
  - generating motion vectors as a function of an incoming video signal and stored video data;
  - generating a processed video signal as a function of the incoming video signal, the motion vectors and stored video data; and
  - generating a display signal for a specific video display as a function of the processed video signal and the motion vectors.
19. A video image display system, the method comprising:
  - means (112) for generating a motion vectors as a function of an incoming video signal and stored video data;
  - means (110) for generating a processed video signal as a function of the incoming video signal, the motion vectors and stored video data; and
  - means (134, 136) for generating a display signal for a specific video display as a function of the processed video signal and the motion vectors.

20. A video image display system, comprising:
  - a motion estimation circuit (112) adapted to generate motion vectors as a function of an incoming video signal and stored video data (114);
  - a front-end motion compensation circuit (110) adapted to generate a processed video signal as a function of the incoming video signal, the motion vectors and stored video data;
  - a scaler (120) adapted to provide a scaled video signal in response to the processed video signal; and
  - a video signal conversion circuit (134, 136) adapted to generate a display signal for a specific video display as a function of the scaled video signal and the motion vectors.